JOINT INTEROPERABILITY ENGINEERING ORGANIZATION

CENTER for SOFTWARE

Management Plan MP

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CONFIGURATION MANAGEMENT PLAN

FOR THE

AIRFIELDS FACILITIES FILE INFORMATION SYSTEM
(AIRFIELDS)

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ABSTRACT

This Configuration Management Plan (CMP) describes the procedures and requirements that will be used to manage software for the Airfields Facilities File Information System (AIRFIELDS) during its life-cycles. It provides detailed information as to the authority and responsibility for each area of concern, and describes what data the Configuration Management Office will collect and maintain for the system. This document is based on the requirements found in Configuration Management, MIL-STD-973, 17 April 1992.

SECTION 1. INTRODUCTION

1.1 <u>Purpose</u>

The purpose of this Configuration Management Plan (CMP) is to define the
procedures, responsibilities and activities to document, control, implement,
account for, and audit all modifications associated with the Airfields
Facilities File Information System (AIRFIELDS). The organizational
relationships between the different Government organizations are described
along with the duties associated with each. This document will also establish
the CM standards and guidelines to be followed to ensure efficient control of
the software modification process in support of AIRFIELDS and users of the
system.

1.2 <u>System Description</u>

AIRFIELDS provides the World Wide Military Command and Control System (WWMCCS)
community automated access to detailed evaluated information on air facilities
in the free world. With data supplied by the Defense Mapping Agency Aerospace
Center (DMAAC), the AIRFIELDS System provides reports in different formats
on-line and off-line to meet the needs of the Military Commands and
Departments for current air facility data utilized in contingency planning and
the conduct of air operations.

1.3 Acronyms and Definitions

1.3.1 Acronyms Used in This Plan. The acronyms found in this document are as
follows:

       a. ACSN   -   Advance Change Study Notice

       b. AIS   -   Automated Information System

       c. CCB   -   Configuration Control Board

       d. CI   -   Configuration Item

e. CM   -   Configuration Management

        f. CMO   -   Configuration Management Office

        g. CSA   -   Configuration Status Accounting

        h. CSC   -   Computer Software Component

        i. CSCR   -   Configuration Status Accounting Report

        j. CSCI   -   Computer Software Configuration Item

        k. DOD   -   Department of Defense

        l. ECP   -   Engineering Change Proposal

        m. FBL   -   Functional Baseline

        n. PBL   -   Product Baseline

        o. PCA   -   Physical Configuration Audit

        p. PM   -   Program Manger

        q. PMO   -   Program Management Office

        r. SPS   -   Software Product Specification

        s. SCN   -   Specification Change Notice.

1.3.2 <u>Advance Change Study Notice (ACSN)</u>. A document that may be used,
instead of a preliminary Engineering Change Proposal (ECP) (DD Form 1692) to
identify an idea or problem in order to obtain authorization to submit a
formal routine ECP.

1.3.3 <u>Allocated Baseline (ABL)</u>. The initially approved documentation describing an item's functional, interoperability, and interface characteristics that are allocated from those of a system or higher level configuration item, interface requirements with interfacing configuration items, additional design constraints, and the verification required to demonstrate the achievement of those specified characteristics.

1.3.4 <u>Computer Software Configuration Item (CSCI)</u>. A configuration item that is computer software.

1.3.5 <u>Configuration</u>. The documented functional and physical characteristics of existing or planned hardware, firmware, software or the combination there of as set forth in technical documentation and ultimately achieved in a product or system.

1.3.6 <u>Configuration Control Board</u>. A board composed of technical and administrative representatives who recommend approval or disapproval of proposed engineering changes to a CIs current approved configuration documentation. The board also recommends approval or disapproval of proposed waivers and deviations from a CIs current approved configuration documentation.

1.3.7 <u>Configuration Documentation</u>. The technical documentation that identifies and defines the item's functional and physical characteristics. The configuration documentation is developed, approved, and maintained through three distinct evolutionary increasing levels of detail. The levels are the functional configuration documentation, the allocated configuration documentation, and the product configuration documentation.

1.3.8 <u>Configuration Identification</u>. Configuration identification includes the selection of CIs; the determination of the types of configuration

documentation required for each CI; the issuance of numbers and other identifiers affixed to the CIs and to the technical documentation that defines the CIs configuration, including internal and external interfaces; the release of the CIs and their associated configuration documentation; and the establishment of configuration baselines for each CI. This configuration identification process will include tapes and disks that establish the baselines for the system.

1.3.9   <u>Configuration Item (CI)</u> . A configuration item is an aggregation of hardware or software that satisfies an end use function and is designated by the PMO, CMO, CCB, and the concerned security office for separate configuration management. This will include all tapes and disks associated with the system. All CIs will be marked, controlled, and documented as stated in paragraph 1.3.10.

1.3.10   <u>Configuration Management (CM)</u> .

      a.   As applied to configuration items, a discipline applying technical and administrative direction and surveillance over the life cycle of items to:

          (1)   Identify and document the functional and physical characteristics of all configuration items.

          (2)   Control all modifications to configuration items.

          (3)   Record and report information needed to manage configuration items effectively, including the status of proposed modifications and implementation status of approved modifications.

          (4)   Audit configuration items to verify conformance to specifications, requirements, interface control documents and any other requirements.

      b.   As applied to digital data files, the application of selected configuration identification and configuration status accounting principles to:

          (1)   Uniquely identify the digital data files, including versions of the files and their status (e.g., working, released, submitted, approved).

          (2)   Record and report information needed to manage the data files effectively, including the status of updated versions of files.

1.3.11   <u>Configuration Management Plan (CMP)</u> . The document that defines how configuration management will be implemented that includes policies and procedures for a particular program.

1.3.12   Configuration Status Accounting (CSA) . The recording and reporting of information needed to manage configuration items effectively, including:

   a. A record of the approved configuration documentation and the identification numbers

   b. The status of proposed modifications, deviations, and waivers to the configuration

   c. The implementation status of approved modifications

   d. The configuration of all units of the configuration item in the operational inventory.

1.3.13   Deficiencies . Deficiencies consist of two types;

   a. Conditions or characteristics in any items that are not in accordance with the item's current approved configuration documentation; or

   b. Inadequate or erroneous item configuration documentation that has resulted, or may result, in units of the item that do not meet the requirements for the item.

1.3.14   Engineering Change Proposal (ECP) . A proposed modification and the documentation by which the modification is described, justified, and submitted to the CCB for approval or disapproval. All ECPs are tracked by the CMO.

1.3.15   Functional Baseline (FBL) . The initially approved documentation describing a system's or item's functional, interoperability, and interface characteristics and the verification required to demonstrate the achievement of those specified characteristics.

1.3.16   Functional Configuration Audit (FCA) . The formal examination of functional characteristics of a configuration item, prior to acceptance, to verify that the item has achieved the requirements specified in its functional and allocated configuration documentation.

1.3.17   <u>Physical Configuration Audit (PCA)</u>. The formal examination of the "as-built" configuration of a configuration item against its technical documentation to establish or verify the configuration items product baseline.

1.3.18   <u>Product Baseline (PBL)</u>. The initially approved documentation describing all of the necessary functional and physical characteristics of the configuration item and the selected functional and physical characteristics designated for the configuration item. In addition to this documentation, the product baseline of a configuration item may consist of the actual equipment and software.

1.3.19   <u>Specification Change Notice (SCN)</u>. A document used to propose, transmit, and record modifications to a specification.

1.3.22   <u>Support Equipment</u>. Equipment and the computer software required to maintain, test, or operate and item or facility in its intended environment.

1.3.21   <u>Version</u>. An identified and documented body of software. Modifications to a version of software (resulting in a new version) require configuration management actions by the designated authority.

1.4   <u>Objectives</u>

This AIRFIELDS CMP is designed for complete accountability and control of all AIRFIELDS software, documentation and related media, both the developmental and operational environment. This CMP will also define the line of authority and responsibility for accomplishing configuration management activities related to AIRFIELDS.

1.5   <u>Approach to Configuration Management (CM)</u>

Configuration Management is the discipline for applying technical and administrative direction and surveillance that encompasses the following:

    a. Identify and document functional physical characteristics of all configuration items

    b. Control all changes to those configuration items that form the baseline system

    c. Record and report on the status of all changes that are approved regarding processing and implementation.

SECTION 2. CONFIGURATION MANAGEMENT ORGANIZATION and RESPONSIBILITIES

2.1 Basic Requirements

The AIRFIELDS Configuration Management Organization (CMO) will implement an internal configuration management system for control of all configuration documentation, physical media, and physical parts representing or comprising the product. For software, the system will address the evolving developmental configuration and support environments (engineering, implementation and test) used to generate and test the product. The configuration management system will consist of the following elements:

      a. Configuration identification

      b. Configuration control

      c. Configuration status accounting

      d. Configuration audits.

The CMO will implement the requirements as stated in this plan to CIs and will insure compliance with those requirements in all phases of the systems life cycle.

2.1.1 AIRFIELDS CM Policy, Plans, and Procedures   . The AIRFIELDS CMO, with the approval of the PM is responsible for establishing AIRFIELDS CMO policy, plans and procedures. Once these items have been established, the CM element is responsible for the following:

      a. Evaluating the effectiveness of the CM plan and its procedures

      b. Recommending changes to the CM program for approval by the PM

      c. Implementing the approved changes.

2.2 Configuration Management Authority

All AIRFIELDS developmental and operational software, documentation and related media modifications will be maintained under the control and authority of the AIRFIELDS CMO. The final authority for approving or disapproving all modifications to AIRFIELDS lies with the AIRFIELDS Program Management Office (PMO) via the Configuration Control Board (CCB).

2.3 AIRFIELDS Configuration Management Activity   .

The AIRFIELDS CMO is made up of the AIRFIELDS Configuration Manager, who is directly responsible to the AIRFIELDS PM, and support personnel as described in fig 2-1. The primary functions of the AIRFIELDS CMO are as follows:

a. Configuration identification and documentation - The process of defining, collecting, and identifying all configuration control items (CCI) to be controlled. This process is concerned with the specific control of the item than its technical adequacy or its quality.

b. Configuration Baselining - The process of officially recognizing a particular configuration with all its associated products (e.g. technical documentation, specific hardware). This action establishes the exact configuration as a control point. It then becomes the reference against which all subsequent modifications must be accounted. The AIRFIELDS product baseline is established when its configuration is delivered to the CMO. Modifications can then only be made on approval of the CCB.

c. Modification control - This is the process of evaluating, coordinating, and approving (or disapproving) the implementation of all modifications to a CI under baseline control. This process assures and expedites the implementation of needed modifications and prevents unauthorized, unnecessary and untested modifications.

d. Configuration accounting - This activity is keeping track of the current configuration status of all identified CIs. This tracking is enhanced by the use of configuration tools. This activity provides the information to trace the evolution of a current revision from it's initial release configuration.

e. Activity reporting - During the modification process the CMO will track and report on each modification. This will include the start/completion date and the actual time for each approved engineering change proposal (ECP) (software, documentation and hardware). These reports will be presented to the PMO/CCB. This activity will ensure that all ECPs are fully accounted for and that schedules are monitored. The CMO will also verify testing of each modification before the modification is included in the release or in the case of hardware that the correct modifications/updating have been completed as specified.

f. Provide quality assurance on all of the above - It will be the responsibility of the CMO to ensure that all of the activities listed above are fully and accurately tracked and documented for the PM and the CCB.

g. The CMO will insure that all changes, modifications and upgrades are completely documented and integrated for the next software release or hardware upgrade. All system upgrades, both software and hardware, will be tracked to ensure that all sites are in full compliance.

2.4 <u>Configuration Control</u>

The basic Configuration Management process centers around change control. The responsibility for configuration control is summarized as follows:

   a. AIRFIELDS Project Manager. Responsible for the approval and release of all project items; chairs (or delegates the chair of) the project CCB

   b. AIRFIELDS Test Director. Develops and maintains formal test and test case files which are the subjects of configuration management; provides technical support to the project CCB

   c. AIRFILEDS Configuration Manager. Manages all baselined configuration items for the project, as directed by the Program Manager; acts as secretariat for the project CCB; manages the project Configuration Management Office (CMO). TXNGK will maintain Configuration Management to include formal change control and utilization of a CCB. The CCB will control the future changes to AIRFIELDS, while the detailed day-to-day management is the sole responsibility of the AIRFIELDS Project Manager. The CCB will be involved in the prioritizing and approval/disapproval of all maintenance activities as well as design modifications, specification changes and all improvement suggestions.

All configuration changes produced for the project are reviewed and released through the Configuration Management Office (CMO) as part of normal approval processing. Once a configuration has completed functional testing, a product baseline will be established. Changes to this baseline can only be made with CCB concurrence.

2.4.1 <u>Configuration Control Board (CCB)</u>. The purpose of the CCB is to review and approve any changes to baselined documentation or software configurations prior to implementation or incorporation of the changes. The CCB is responsible for the following:

   a. Review and approve documents and component changes submitted for baselining

   b. Review technical evaluation of DRs, SPRs, ECPs and SERs, and make recommendations to the Project Manager regarding the approval/disapproval of DRs and SPRs written against baselined products

   c. Review and approve SCNs against design requirements

   d. Review DRs and SPRs to baselined code and documents to assess the validity of the problem

e. Determine when updates to baseline libraries of released files should be generated and released

f. Review DRs generated to request changes to documents under CCB control for the purpose of evaluating their adequacy and completeness

g. Review prototypes of approved requirements and provide recommendations to the Program Manager regarding changes to the design.

The permanent membership of the CCB consists of the chairman, the CMO, system engineering, system installation, software engineering and system administrators.

2.5 Configuration Management Documentation

The following describes the forms and logs that will be used and maintained by the AIRFIELDS CMO. These forms are for the purpose of documenting and tracking of all reported problems, all requested modifications, either approved or disapproved, for software or hardware, and requested specification changes. A hard copy of all executed forms will be maintained as a backup and history by the CMO.

2.5.1 Deficiency Report (DR) . Applies to discrepancies discovered by the technical development staff. A DR can be submitted to report a real or perceived error in system function. The purpose of the DR is to start an investigation of the problem to determine if there is one with the system (either software or hardware) or a possible user misunderstanding of the function or use of the system. Before any work is started on a DR it must be prioritized and approved by the PMO. The DR forms will be maintained and tracked by the CMO to ensure that they are completed as required and report to the PMO. If a DR indicates a system failure of any kind an ECP will be required for modification.

2.5.2 Incident Report (IR) . The IR form is used to report suspected system problems to the technical development staff. Generally, IR's will be submitted by users directly to the CMO. The CMO will submit the forms to the technical staff for analysis. If it is determined that a problem with the system exists, a deficiency report (Section 2.5.1) will be generated.

2.5.3 Software Problem Reports . SPRs are used by AIRFIELDS software developers

to document problems and their permanent solutions for baselined software source code, data and related files. The SPR is initiated when a problem is detected or confirmed. The SPR form provides a tangible record of the problem, its disposition, and the changes made to correct it.

2.5.4 <u>Advance Change Study Notice (ACSN DD-2616)</u>. Prior to the preparation of the formal ECP, the customer, CCB and the AIRFIELDS PMO should agree on the need for detailed information to be provided about the change idea involved. The ACSN shall be used by either the customer, the CCB, or the PMO to identify topic for a change proposal. However, emergency, and urgent type ECPs do not require an ACSN prior to submittal. Upon the submittal of an ACSN by a customer, CCB or PMO the software development team will fill out areas on the form that would not be known by the CCB or PMO such as items affected, alternatives, etc. The ACSN would then be resubmitted to the PMO and CMO for review and tracking by the CCB .

2.5.5 <u>AIRFIELDS Engineering Change Proposal (ECP 1692)</u>. An ECP is required to modify a function, add a function or to delete a function. The ECP will also be used to implement and track changes to software or hardware that have either been initiated via the DR or SPR and are of a large enough scope to impact a release's schedule. No work will be started on any ECP until the chairman of the CCB approves the work with their signature in the approval block. The CMO will maintain all ECPs, ensure that all required signatures and dates are entered, all areas are filled in completely and correctly and that all modifications are fully tested.

2.5.5.1 <u>Emergency Modifications</u>. An ECP can also be submitted without an ACSN when urgent or emergency priority modification is required. An emergency modification is to effect an change in operational characteristics that, if not accomplished without delay, may seriously compromise national security or to correct a system halt (abnormal termination) in the production environment such that CSCI mission accomplishment is prohibited. An urgent priority is that if a modification is not accomplished expeditiously, it may seriously compromise the mission effectiveness.

2.5.6 <u>Specification Change Notice (SCN)</u>. The software development team will, concurrent with an ECP, prepare a separate proposed DD Form 1696, "Specification Change Notice", in accordance with MIL-STD-973, for each specification that would require revision if the ECP is approved. The SCN(s) will be submitted with the ECP to the PMO and CCB for approval and authorization, or disapproval. SCNs for a specification are sequentially numbered from SCN 1. The proposed SCN, any revision, and the approved SCN will carry the same number. Once an SCN has been submitted with the ECP, its sequence number related to that revision of the specification will not be

changed or assigned to another ECP/SCN package. Any SCN numbers associated
with a disapproved ECP will not be reused. The CMO will track the progress of
each SCN with its ECP to ensure that every SCN is responded to, either with an
approval or disapproval, is withdrawn, or is in conflict with another ECP
and/or SCN.

2.5.6.1   Attachments to Proposed SCNs   .   The attachments to the proposed SCN
will be:

> a.   Pages containing detailed information about the exact proposed
>   changes to the specification by reference to the paragraph, page,
>   figure, or table and by citing the words/information to be
>   changed in the "From/To " format; or
>
> b.   New specification pages in format suitable to be substituted for
>   existing pages, identification with the specification number and
>   SCN approval date, numbered with the same numbers of the pages
>   they replace plus a suffix letter where additional pages are
>   needed to replace a page (e.g., new pages 5 and 5a replace old
>   page 5, and all portions affected indicated by symbols (e.g.,
>   change bars, asterisks etc.) in the margin; or
>
> c.   A proposed specification revision identified with the same number
>   as the specification to be superseded with a new revision letter,
>   prepared to the same format, and all portions affected identified
>   with symbols in the margin or containing a note explaining that
>   the changes are too extensive to be identified.

2.5.6.2   Supersession .   When a proposed SCN must be revised and resubmitted,
the resubmitted SCN will retain the same basic SCN number but must be
identified as a superseding revision to avoid confusion with any previous
submittal of the SCN.

2.5.6.3   Approved SCN .   The software team will received approved SCNs from the
CMO and will use the approved SCNs as authorization to update the
specifications in accordance with the approved SCNs. An approved SCN also
provides a summary listing of pages affected by all previously approved
changes to that particular revision of the specification. SCNs are not
cumulative insofar as transmittal of changes pages from previous SCNs remain
in effect unless changed or canceled by an SCN of later issue. However, the
summary of current changes shall be a cumulative summary as of the date of
approval of the latest SCN.

2.5.6.4   Change Pages .   Updated and reissued pages will be completed reprints
of pages suitable for incorporation by removal of old pages and insertion of
new pages. All portions affected by the change will be indicated by a symbol
in the margin adjacent to the change and encompassing all changed portions.
When changed pages are issued for specifications with pages printed on both

sides of a sheet, and only the page on one side if a sheet is affected by the change, both sides of the sheet will be reissued. The unchanged side will be reprinted without change and will not carry the date of change or be included in the change summary as being affected by the change. If the document has had four changes issued or if it is determined that at least half of the document is having change pages issued for it, an entire new document will be printed.

2.5.7 <u>Detailed Configuration Requirements</u>. The following paragraphs will define the detailed requirements for the AIRFIELDS configuration management program.

2.5.7.1 <u>Configuration Identification</u>. Configuration identification will be to establish and maintain a definitive basis for control and status accounting for a CI throughout its life cycle. A configuration item can be determined to be a hardware element, software element, or some combination of both, whose functions and/or physical characteristics are set forth in technical documents whose formats and contents have been defined in terms of a specific standard. The aggregation of such elements must be realizable in a product that can be observed and evaluated in terms of the degree of satisfaction of the CCB approved requirements for form, fit, and function. To accomplish configuration identification the following steps will be used for both software and hardware:

    a. Select the hardware and/or software elements and the documents that define those elements and designating them as CIs

    b. Select configuration documentation to be used to define configuration baselines for each CI

    c. Establish a release system for configuration documentation

    d. Define and document interfaces

    e. Enter each item of configuration documentation and computer software source code into a controlled configuration

    f. Establish the proper baseline of the system/CI and implement the

        applicable configuration documentation

    g. Assign identifiers to the CIs and their component parts and associated configuration documentation, including revision and version numbers where appropriate

    h. Ensure that the marking or labeling of items and documentation with their applicable identifiers enables correlation between the item, configuration documentation, and other associated data

    i. Ensure that applicable identifiers are embedded in the source and object code

.

2.5.7.2 <u>Configuration Item Selection</u>. Any item requiring logistics support
and designated for separate procurement is a CI. Computer hardware will be
treated as CIs. Computer software will be treated as CSCIs throughout the
life cycle of the program regardless of how the software will be stored.
Final CI selection approval will be made by the PMO.

2.5.7.3 <u>Developmental Configuration</u>. A program will be implemented to
control the developmental configuration for software, documentation, and
hardware. This process will be used to control the documentation and
repositories containing the elements of the developmental configuration. A
problem report will be prepared to describe each problem detected in software,
documentation, or hardware that has been placed under internal configuration
control. The problem report will describe the corrective action needed and
the actions taken to resolve the problem. The reports will be used in the
corrective action process that has been set up to handle problems detected in
the products under configuration control. The corrective action process will
ensure that all detected problems are promptly reported, action is initiated
on them, resolution is achieved, status is tracked and reported and records of
the problems are maintained for the system life cycle.

2.5.7.4 <u>Documentation Library</u>. A documentation library will be established
and procedures will be implemented for controlling the documents residing
within the documentation library.

2.5.7.5 <u>Software Development Library</u>. A software development library (SDL)
will be established and procedures will be implemented for controlling the
software residing within the SDL.

2.5.8 <u>Configuration Baselines</u>. Configuration management normally employs
three types of configuration baselines, the functional, allocated, and product
baselines. These provide for the progressive definition and documentation of
the requirements and design information describing the various CIs designated
for the system. The PMO and the CMO will determine the types of
specifications that should be used to define each CI. MIL-STD-973 will
establish the order of preference criteria that will be used in the process.

2.5.8.1 <u>Configuration Baselines and Their Configuration Documentation</u>. The
configuration baselines for all CIs will be established by the PMO with the
CMO. The documentation, Functional Configuration Documentation (FCD),
Allocated Configuration Documentation (ACD), and Product Configuration
Documentation, defining the configuration baselines will be mutually
consistent and compatible. Each succeeding level of configuration
documentation from FCD to ACD to PCD will be traceable to its predecessor(s).
If a conflict arises between levels of documentation, the order of precedence
will be (1) FCD, (2) ACD, and (3) PCD.

2.5.8.2 <u>Maintenance of Configuration Documentation</u>. Once the related

configuration baseline has been established, the CMO will control and maintain the originals of the current approved configuration documentation for all identified configuration items.

2.5.8.3 <u>Modification Release</u>. Modifications to the release configuration documentation will only be accomplished as a result of an approved ECP. The release will only be accomplished when the completed package of affected documentation is ready for simultaneous release, except as approved by the PMO/CCB.

2.5.8.4 <u>Control of CIs</u>. The basic unit of configuration identification and control is termed a configuration item (CI). As defined in the glossary, a CI is a portion of the system (hardware, software, or firmware) that satisfies a discrete end-user function and is designated for CM. Configuration identification is controlled through three evolutionary stages or levels. Each level establishes a specific baseline. The three levels are:

  a. The functional configuration identification: established when the developer and the procuring agency concur about the particular functions to be implemented. After a baseline is established, it can be altered if recommended changes (additions, deletions, or alterations) are approved by the appropriate authority within the procuring agency via an ECP.

  b. The allocated configuration identification: established when the developer and the procuring agency concur on the specific scheme for allocating the approved functionality to particular architectural sub-elements of a designated CI. Again, alterations to the allocated baseline can be made when recommended changes are approved by the appropriate authority via an ECP.

  c. The product configuration identification: established when the developer and the procuring agency concur that functional qualification testing and integration of tested sub-elements are completed. The product baseline defines the as-built product, which consists of the approved product baseline and any approved changes.

In addition to formal baselines, DOD-STD-498 specifies establishing developmental configurations to control the evolving CSCI from the establishment of the allocated baseline to the establishment of the CSCI product baseline.

Change control for the evolving AIRFIELDS integration developmental configuration resides with the AIRFIELDS CMO, provided the change does not impact the AIRFIELDS

functional or allocated baselines. Change control of the evolving AIRFIELDS
independent test developmental configuration resides with the AIRFIELDS CMO.

2.5.9   <u>Software Marking and Labeling   </u>. The marking and labeling of the
software will be as follows:

    a. Software identifier and version and Computer Program Identification
       Number (CPIN), where applicable, will be embedded in the source code
       header.

    b. Each software medium (e.g., magnetic tape, disk) containing copies of
       tested and verified software entities will be marked with a label
       containing, or providing cross-reference to a listing of the
       applicable software identifiers of the entities it contains.

    c. Media copy numbers will distinguish each copy of the software media
       from its identical copies. Each time a new version of software is
       issued new copy numbers, starting from 1, will be assigned.

2.5.9.1   <u>COTS Labeling </u>. When a CI is wholly developed with private funding
and modified to satisfy Government requirements, the CI will be re-identified
as a Government modified CI.

2.6   <u>Version and Release Identification   </u>

This section describes the methods that will be used to identify AIRFIELDS
releases. The terms "release" and "version" are often used interchangeably to
describe a particular aggregate of software. Strictly speaking, a version is
an identified and fully described aggregation of software that requires CM
actions. A release is a CM action that results in a particular version of
software's being made available for a specific purpose, such as integration,
testing, or operations. This section describes the version identification
scheme to be used to identify version releases of AIRFIELDS RELEASES.
A two digit identification scheme will be used to identify a new version of
the AIRFIELDS software to be released. The form of this identification scheme
is XX.YY., where:

    XX = the major version

    YY = the minor version or incorporation of a AIRFIELDS emergency fix

The first digit (XX) uniquely identifies the software with fully documented,
significant functionality.

The second digit (YY) uniquely identifies an aggregate of software that provides the basic functionality of the major version and some new functionality or emergency fix. The new functionality is not significant enough to release it as a new major version.

Each release of AIRFIELDS software will be accompanied by a Software Release Bulletin that uniquely identifies the content and functionality provided or problems resolved. If possible, the main menu should identify the complete version of software to the user. Every release of a major or minor version should contain a modification to the main menu that identifies the new version identification to the user. This practice will greatly assist in fault isolation of user-reported problems.

2.6.1   <u>Software Component Numbering Conventions</u>   . The DOD-STD-498 methodology defines three types of software elements: CSCI, CSC, and CSU. The glossary includes definitions of each of these terms. Each software system is composed of one (1) to n (n is used to indicate no upper bound) top-level software elements identified as CSCIs. Each CSCI is logically decomposed into one (1) to n CSCs. Each CSC is logically decomposed into 0 to n CSUs. The 498 methodology leaves a great deal of flexibility for the developers/maintainers in defining relationships among the software objects.

The purpose of applying a software component numbering convention is to provide the capability to quickly determine a "unit's" relationship to other "units" in a given system. The number assigned to a given component is incorporated into the prologue for the "module" and is used in the Software Product Specification in the description of the detailed design for a given module.

A preliminary AIRFIELDS software component numbering convention of XXX.YYY.ZZZ is recommended, where XXX represents the AIRFIELDS CSCI to which a given CSU belongs, YYY represents the CSC to which the CSU belongs, and ZZZ represents the sequential number assigned to the CSU or the module itself.

As each of the AIRFIELDS CSCIs are identified, the next sequential number should be assigned by the CMO.

Each AIRFIELDS CSCI can be decomposed into one or more CSCs, and a unique sequential number can be assigned to each CSC within a given CSCI. For example, a CSC numbered 1.2 identifies the second CSC within that CSCI. As new CSCs for an existing AIRFIELDS CSCI are identified, the next sequential number will be assigned. For new CSCIs, the CMO will assign sequential numbers for all CSCs within the new CSCI.

Each AIRFIELDS CSC may be (but is not required to be) further decomposed into a number of CSUs. In other words, a CSC may not necessarily have subordinate CSUs. Each CSU within a AIRFIELDS CSC should be assigned a unique sequential number. For example, a CSU numbered 1.2.1 identifies the first CSU of the second CSC within that CSCI, whereas a CSU numbered 3.2.1 identifies the first CSU of the second CSC within that CSCI.

Each AIRFIELDS CSC may be (but is not required to be) further decomposed into a number of CSUs. In other words, a CSC may not necessarily have subordinate CSUs. Each CSU within an AIRFIELDS CSC should be assigned a unique sequential number. For example, a CSU numbered 1.2.1 identifies the first CSU of the second CSC within that CSCI, whereas a CSU numbered 3.2.1 identifies the first CSU of the second CSC within that CSCI.

As new CSUs for an existing AIRFIELDS CSCI are identified, the next sequential number will be assigned by the CMO. For new CSCIs sequential numbers for all CSUs within the new CSCI will document this numbering convention within the Software Development Plan for the CSCI; and will implement the numbering convention within the Software Product Specification.

Implementation of an AIRFIELDS component numbering convention will allow the CMO to quickly identify the relationship of a given unit to all other units within AIRFIELDS.

2.6.2   <u>Software Component Naming Conventions</u>. A software component naming convention is constrained by the allowable size of the name in the programming language. Each new AIRFIELDS CSCI will have its software component naming convention standard with that established by the CMO. The naming conventions should follow these general standards:

      a.   Names should be chosen to be meaningful. They should indicate some notion of the content or function of the software component to the developer/maintenance. Naming conventions that indicate the relationship of the software component to other software components within the CSCI should not be used on new development efforts.

      b.   If abbreviations are used in a name, the leading character of each word in a name should be used. The following example illustrates this convention:

        prs   for **P**rocess **R**ule **S**tart

        Additionally, care should be taken that the abbreviation does not suggest unintended meanings. An example of an unintended meaning is illustrated below:

        bld   for **B**inary **L**ogical **D**ecoder

        The abbreviation **bld** could be mistaken for the term **build.**

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SECTION 3. CONFIGURATION STATUS ACCOUNTING (CSA)

3.1 Purpose of CSA

The purpose of CSA is to assure the accurate identification of each CI and delivered unit so that the necessary support elements can be correctly programmed and made available in time to support the CI. A complete and accurate CSA will enhance program and functional manager's capabilities to identify, produce, inspect, deliver, operate, maintain, repair, refurbish, etc, CIs in a timely, efficient, and economical manner in satisfying their assigned responsibilities.

3.1.1 CSA Requirements . The CMO will establish an information/management system to maintain a record of the most current versions of the documents, or their electronic equivalents that describe the CIs, their component parts and assemblies, and to maintain a record of the most current identification numbers used to identify the CIs. The system should also identify all proprietary or restricted data and the CIs to which each applies. Specific information system capabilities and data elements selected from the following paragraphs will be provided. These data elements will be incorporated into the system progressively and not later than the establishment of the FBL, ABL, or PBL. These data elements will be updated as changes from the baseline configuration are approved, so that the most current descriptive information is the primary information stored. Where a CI has more than one approved configuration in continuing operation the system will identify all currently approved documentation/identification numbers for those configurations.

3.1.1.1 Specification Revision/SCN Level . For each specification, prepared and maintained for this program to describe and control the performance and/or design of the system and its component CIs, a record will be established and kept current. The record will show the following:

   a. The specification identification number

   b. The specification title

   c. The CI nomenclature

   d. The current revision identifier and the date of issue

   e. The most current approved SCN number

   f. The related ECP number.

3.1.1.2 Specification Revision/SCN History . The historical file of the information in paragraph 3.1.1.3 will be maintained for each revision of each

CI specification from the date of the initial release of the basic specification through the current revision and the SCN.

3.1.1.3 Software Version Level . For each item of software purchased/created and maintained for the operation and maintenance of this system and its component CIs, a record will be established and kept current. The record will reflect the following:

    a. The software identification number

    b. The related CSCI specification number and title

    c. The software title

    d. The current version and interim version level

    e. The ECP number effecting the modification, where applicable, and the

      identifier of the SCD effecting the detailed change to the software

    and associated documentation

    f. The effective release date of the current version/interim version

    g. The number, title, version and date for the current

     operations/programmers/maintenance manuals and version description

    documents

    h. The number title, version and date for the current test procedures

    i. If the software is resident on a "read only" device (e.g., PROM), the

   current part number for the software/medium combination.

3.1.1.4 Software Version History . A historical file of the information in paragraph 3.1.2.5 maintained for each version and interim version of the software from the date of the initial release of the software through the current version.

3.1.1.5 CI Component Indentured Listing . For each CI a record will be generated and kept current identifying the CI by name and identifier. The record will identify all hardware parts that comprise the system and the source code and object code components/unit that comprise the CI. It will be presented in a hierarchical, or indentured, manner so that the relationship of the different pieces of the CI can be understood by looking at the arrangement of the record. At a minimum the record will list all units that have been selected for support, including those items that have ben superseded but still used configuration.

3.1.2 Tracking Active Change Processing . The information management system controlled by the CMO will track all proposed changes from the first communication of an idea for a modification to the system, through either

official notice of approval or disapproval. The system will contain general information about the change proposal and will track specific events and dates associated with the processing of the change. Specific information about system capabilities and data elements selected from the following paragraphs will be provided. The required information from the initial study document, for the formal proposal, and for each correction and revision to the proposal(s), and it will provide cross-correlation for all related formal proposals.

3.1.2.1 Modification Process Status . The CMO will establish on the information system (and will keep current) a separate record to identify the following for each modification:

    a. The type of modification involved (e.g., ECP, deviation/waiver)

    b. The modification identification number (e.g., ECP number)

    c. The modification title

    d. The configuration baseline(s) affected

    e. The title and number of the affected specification(s)

    f. The related SCN number

    g. The priority

    h. The date that the modification was given to the PMO or the CMO

    i. The date a decision is required on the modification (suspense date)

    j. The final CCB decision and date

    k. The date that the official decision notification was provided to the requestor.

3.1.2.2 Modification Process Status History . A historical file will be maintained on the information system of the information in paragraph 3.1.3.1 for each modification document submitted to the PMO or CMO throughout the life of AIRFIELDS.

3.1.2.3 Event Data Entries . For each modification tracked in paragraph 3.1.2.1, the system will identify and suspense the discrete activities involved in the review of the modification by the PMO. It should automatically assign suspense dates by which those activities must be completed, based on the need date and the priority of the modification. The CMO will have the capability to change suspense dates except for the need date and to input completion dates reflecting the status of the processing of the

modification. Some of the typical events that this information system will be
capable of tracking include:

   a. Modification receipt

   b. Distributed for coordination/comments

   c. Corrections due from software maintenance

   d. CCB

   e. Design activity's need date

   f. Modification approval date.

A history will be maintained for all of the event data.

3.1.2.4 <u>Date Search Capabilities</u>. For each modification entered from
paragraph 3.1.3.1 with a specified beginning and ending date by the user, the
system will have the capability to provide information about all scheduled,
but not yet completed events, events that should have been accomplished by an
as-of-date and sort them by the magnitude of their delinquency.

3.1.3 <u>Approved Changes to a CI Configuration and Change Identification</u>. An
information system will be established that will document the initially
approved configuration of each CI and to identify the impact of each
authorized modification to each CI. The following items define the specific
information system capabilities and data elements that will be required.
These items are not all inclusive and may need to be modified once the CIs for
AIRFIELDS are identified.

   a. The modification identification number

   b. The title of the change

   c. The date of approval of the modification

   d. The complete number of the CI module/unit being modified

   e. The number of the existing CI modules/units that need to be changed as
       a result of the modification

   f. The new number(s) of the software component/unit version and related

    affected manuals resulting from each approved modification.

3.1.3.1 <u>Implementation of Approved Modifications</u>. The information system
will track the accomplishment of all tasks required as a result of all
approved change proposals. The system will include key elements of
information about each modification, including the functional activities

responsible for the accomplishment of the tasks. The actual dates for the accomplishment of various tasks involved in the implementation of each approved modification. Specific information system capabilities and data elements selected, from the following paragraphs, will be provided.

3.1.3.2 <u>Approved Modification Implementation Activities</u>. For each modification approved to the system or one of its component CIs, the record established for paragraph 3.1.4 will include specific suspense dates for the completion of all activities related to each of the major areas of impact of the modification. The record will also identify the specific point of contact responsible for each activity including the phone number. As appropriate to the modifications involved, these activities include, but are not limited to, the following:

    a. Status of redesign and testing

    b. Specification modification/revision activity

    c. Software revision activity

    d. Technical manual preparation/revision activity

    e. Spares purchased and distribution

    f. Support equipment design, purchase, or modification.

3.1.4 <u>Specification Modification/Revision Activity</u>. If the requested modification affects a AIRFIELDS specification, the information system record will track the activities required to distribute the official SCN to the holders of the specification. In some cases the approved modification will result in a revision to the specification. The system will track the similar activities required to distribute the revised specification. Typical events include the following:

    a. Approval copy prepared (update of originals)

    b. Copy submitted to PMO/CCB

    c. Copy approved by CCB

    d. Approved copy submitted to software support team

    e. SCN and change pages distributed to all addressees.

3.1.4.1 <u>Software Revision Activity</u>. If a modification affects a software unit change then the record will track the revision, review, and official release of the software incorporating the modification.

events include the following:

   a. Receipt of the approved modification document

   b. Coding, verification, and testing of the software modifications

   c. Revision of affected manuals

   d. Review and approval by each design function

   e. Approval/concurrence by the approving authority (CCB, PMO, customer)

   f. Release of new software version

   g. Update of software development library materials

   h. Reproduction on appropriate medium (e.g., disk, cassette, magnetic

       tape, electronic link, etc.)

   i. Revised code and manuals distributed to all addressees.

3.1.4.2 Technical Manuals and other Related Documentation
Preparation/Revision . If the change requires revision of the information/data
in various manuals written for operation or maintenance of the CI, the new
instructions must be available when deliveries of the new design to the
user/customer are started or when modifications are made to the hardware. The
information record will track the events leading to the publication and
distribution of the new instruction. Typical events will include the
following:

   a. Technical writing of the revision

   b. Verification of the instructions

   c. Revalidation of the technical manual(s)

   d. Transmit original to control activity

   e. Reproduction of the required copies

   f. Distribution of the copies to addressees.

3.1.4.3 Support Equipment Design, Purchase and/or Modification . If the
modification requires the development or purchase of new support equipment,
the tracking record should monitor the events required to provide the support
equipment to the supporting activities in time for the new configuration.
When modification of existing support equipment is required for the new
configuration, that modification will be tracked with a record identical to

the one used for tracking modifications of operational units. Typical items to track are as follows:

    a. Quantity required

    b. Purchase/work order issued

    c. Issuance of requirements documentation

    d. Redesign or new design work completed

    e. Prototype constructed

    f. Testing completed

    g. Final CCB approval

    h. Update engineering release records

    i. Deliveries received.

3.1.5 <u>Tracking Action Items</u>. The information/management system will be capable of tracking all action items that were established as a part of the functional and physical configuration audits for all of the program's configuration items and also the system if applicable. The system will contain these items; general information about the action item and the article(s) that it affects; specific activities and suspense associated with closing the action item. Specific capabilities and data elements selected from the following paragraphs will be provided. The system will provide cross-correlation of all action items relating to a specific audit for a specific configuration item.

3.1.5.1 <u>Audit Action Item Status</u>. For each action item officially established by the PMO/CCB at each configuration audit for the program, the tracking system will establish and keep a separate record to identify the following:

SECTION 4. FUNCTIONAL CONFIGURATION AUDIT (FCA)

4.1 Purpose

A Functional Configuration Audit (FCA) will be conducted for each
configuration item for which a separate development or requirement
specification has been baselined and for the overall system. The objective of
the FCA will be to verify the configuration item's and the system's
performance against its approved configuration documentation. Test data for
the FCA will be that collected from the test of the configuration of the item
that is to be formally accepted or released for production from a prototype or
preproduction article. If a prototype or preproduction article is not
produced, the test data will be that collected from tests of the first
production article. Subject to PMO approval, the FCA for complex items may be
conducted in increments. In such cases, a final FCA may be conducted to
ensure that all requirements of the FCA have been satisfied. In cases where
item verification can only be completely determined after system integration
and testing, a final FCA will be conducted using the results of these tests.

4.2 CMO Requirements

The scheduled dates, and the actual completion dates for the FCAs will be
recorded in the CSA information system. The CI or system will not be audited
separately without prior PMO approval of the FBL and the ABL for the CI or
system involved.

4.3 CMO Responsibility

  a. The CMO will maintain and provide the following information prior to the
     audit date:

   (1) Identification of items to be audited

  (a) Nomenclature.

  (b) Specification identification number.

  (c) CI identification.

   (2) Status of test programs to test configuration items with automatic

       test equipment if applicable.

  b. A matrix for each CI will be provided at the FCA that identifies the

       requirements listed in the specifications including a cross reference

       to the test plan, test procedures, and test report. Other information
          such as the result of inspections, the analyses for each
requirement,

       and the deficiency report number will be provided if appropriate and

available. This matrix becomes part of the FCA.

c. An FCA check sheet will be prepared that identifies each document that

is to be audited and what task need to be accomplished at the FCA for the

CI. A sample FCA checklist is shown in Appendix A.

4.4 <u>Verification Procedures and Requirements</u>

Information will be provided by the AIRFIELDS software support team at the FCA for each CI being audited and will describe the test results and findings for each CI. As a minimum, the information will include CI requirements that were not met, with a proposed solution for each item, an account of the ECPs incorporated and tested, and a general presentation of the entire CI test effort describing the problem area as well as accomplishments. The audit should also include the following:

a. The test procedures and results will be reviewed for compliance with specification requirements.

b. The following testing information will be available for the FCA.

    (1) Test plans, specifications, descriptions, procedures, and

         reports for the CI.

    (2) A complete list of successful accomplished tests during which

         pre-acceptance data was

             recorded.

    (3) A complete list of tests required by the test requirements but not yet performed.

    (4) Preproduction test results.

c. An audit of formal test plans, specifications, and procedures will be made and compared against the official test data. The results will be checked for completeness and accuracy. Deficiencies will be documented and made a part of the FCA minutes. Interface requirements will be reviewed. Completion dates for all discrepancies will be clearly defined and documented.

d. For those requirements that cannot be completely verified through testing, the FCA will be used to determine whether adequate analyses or simulations have been accomplished and whether adequate results of this analyses or simulations are sufficient to insure that the CI meets the requirements detailed in the specification. All ECPs that have been approved will be reviewed to ensure that they have been technically incorporated and verified.

e. The test reports will be audited to validate that they are accurate and completely describe the CI tests. Test reports, procedures, and data used will be included in the minutes of the FCA.

f. CIs that fail to pass quality requirements are to be analyzed as to the cause of the failure. Appropriate corrections will be made
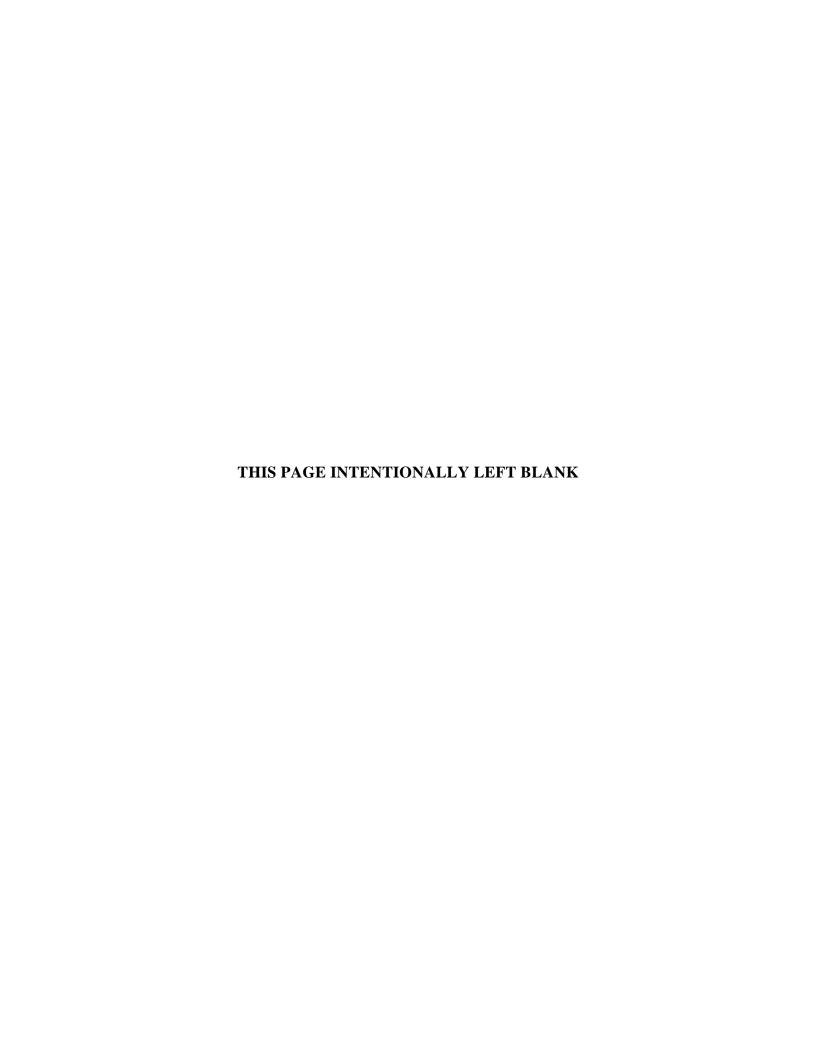
before it is subjected to retesting.

      g. The partial completion of a FCA for those CIs whose verification is contingent upon the completion of integrated system testing will be acknowledged with a date established for the completion of the FCA for the CIs.

      h.   For CSCIs the following additional requirements will apply:

          (1) Review data base characteristics, storage allocation data and timing, and sequencing characteristics for compliance with specified requirements

          (2) Review all documents that comprise or describe the contents or the use of the software product for format and completeness

          (3) Review the records that reflect the changes made to the developmental configuration for the CSCI

          (4) Review the listings of all versions of the developmental and non-developmental software for the CSCIs that are in the software library

          (5) Review the findings of all CM and software QA audits of the CSCI.

4.5 Post Audit Actions

After the FCA is completed the following items will be completed:

      a. Publish and distribute copies of the FCA minutes
      b. Record the results of the FCA in the CSA record for each CI audited
      c. Complete tasks that were identified during the FCA.

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SECTION 5. PHYSICAL CONFIGURATION AUDIT (PCA)

5.1 Purpose

The PCA will be the formal examination of the as-built configuration of a CI
against its design documentation. The PCA for a CI will not be started unless
the FCA for the CI has already been accomplished or is being accomplished
concurrent with the PCA. After successful completion of the audit and the
establishment of a PBL, all subsequent modifications are processed by a formal
modification action. The PCA also determines that the acceptance testing
requirements prescribed by the documentation is adequate for acceptance of a
CI by quality assurance activities. The PCA includes a detailed audit of
specifications, technical data, tests utilized in development of the CIs,
documentation, listings, and operation and support documents for CSCIs. The
PCA will also include an audit of the release documentation and testing
records to make sure that the as-built and/or as-coded configuration is
reflected by this documentation. For software the product specification,
Interface Design Document, and the VDD will be part of the PCA.

    a. The PCA will be conducted on a unit of the item selected by the CCB,
        PMO and CMO.

    b. Satisfactory completion of a PCA and approval of the product
        specification are necessary for the PMO, CMO to establish the PBL for
        the CI.

A sample PCA checklist is shown in Appendix A.

5.2 Tracking Requirements

The scheduled dates and actual completion dates for the PCAs will be recorded
in the CSA information system. All approved modifications will be
incorporated into the new revisions of the applicable configuration
documentation prior to the PCA. In addition the final draft copy of the
product specification available for review prior to the PCA.

5.3 CI Information Notification

Prior to the PCA the following information will be provided to the PMO, CMO
and the CCB:

    a. Identification of items to be audited by:

            (1) Nomenclature

            (2) Specification Identification Number

            (3) CI Identifiers

       (4) ECP Numbers.

   b. Reference information to the CI being audited as follows:

       (1) CI specification

       (2) A list showing both the approved and outstanding modifications against the CI

       (3) Acceptance test procedures and associated test data

       (4) Operating and support manuals; including operators manuals, maintenance manuals, programmers's manuals, etc

       (5) Version Description Document (VDD)

       (6) FCA minutes for each CI

       (7) Finding/Status of testing

       (8) Interface Design Documents for software.

   c. Make available for the PCA at time of audit all data describing the item configuration to include:

(
1) Current approved ECPs, DR's and SCNs of hardware, software and interface requirements specifications

       (2) Identification of all modifications actually made during

testing

       (3) Identification of all required modifications not completed

       (4) All configuration documentation, or electronic representations of the same, required to identify the CI.

   d. CIs that have shown compliance with the specifications and requirements will be approved for acceptance by the PCA review. An authorized signature will certify the CI meets the specifications.

   e. The PCA will also verify the following that all documents meet the standards for format and completeness.

   f. A review of all required operation and support documents will be accomplished for completeness correctness, and adequacy to operate and support the CSCI(s). Formal verification or acceptance of these documents should be withheld until system testing to ensure that the procedural contents are correct.
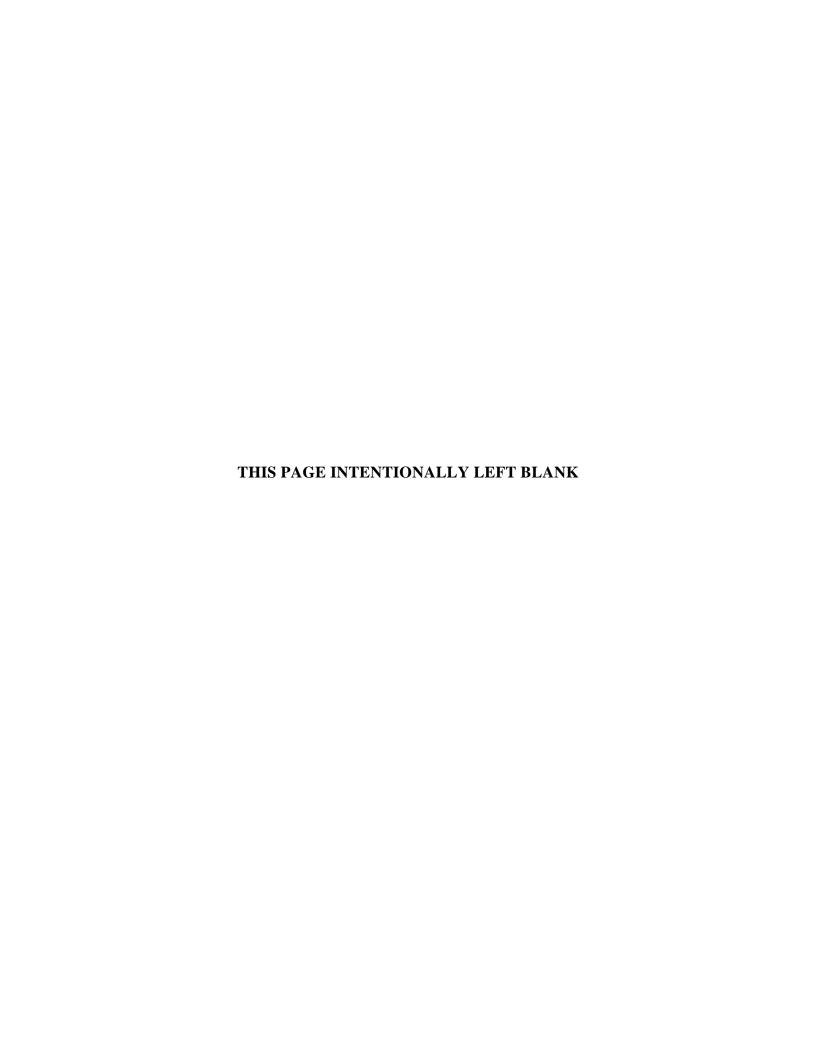
SECTION 6. PROBLEM REPORTING PROCEDURES

6.1 AIRFIELDS User Incident Report (IR)

This section provides an example and instructions for the AIRFIELDS User
Incident Report form (Figure 6-1). This form is intended to be the mechanism
for the customer/user to report problems to the AIRFIELDS CMO. All problems
will be documented and tracked by AIRFIELDS CM to determine if there are weak
areas in user training, documentation, software performance, or equipment
reliability. It is important that all information fields for the originator
be fully completed. Missing or incomplete information can cause unnecessary
delays in the analysis and resolution of the problem.

6.1.1 Configuration Management . Before an analysis of the incident can be
done, the AIRFIELDS Configuration Management Office (CMO) is required to
complete the information at the top of the form. The space for the deficiency
number will not be filled in unless the analysis of the IR determines that
there is a repeatable problem with the software, hardware or documentation.
The deficiency report number will then be added to the form and the incident
report number added to the deficiency report for cross reference. The status
area will be maintained by the CMO for tracking purposes until the IR has been
closed. The following definitions will be used to determine the status of the
IR:
    a. SEVERITY - The following criteria will be used to assign a severity
number from 1 to 4 to the IR:

        1 - A function failure that has caused a catastrophic system failure
        with a system re-initialization as the only solution.

        2 - A function failure with a work-around solution that does not cause
        the system to crash

        3 - A problem with the function that is an inconvenience to the user
        but were the function and the system continues to process

        4 - A minor annoyance to the user such as a misspelled word or
        incorrect spacing that does not prevent or interfere with the user
        accomplishing their task.

    b. OPEN - An IR will remain open until research is completed on the
pending IR. If a deficiency report (DR) is required the IR will remain open
until the work specified in the associated DR has been completed.

c. CLOSED - If a reported problem is verified as working to specifications or the problem can not be duplicated, the IR will be marked closed with notification of the originator.

d. DR ASSIGNED - If the problem noted in the IR is determined to represent a defect in the AIRFIELDS system, then a DR will be generated. That DR number will be added to this field on the IR form to associate that IR with the DR.

e. RETEST - If it is determined that an IR is valid system deficiency then an DR will be generated. The retest area will be marked "YES" to indicate that the specific problem noted in the IR needs to be corrected and verified.

6.1.2 Originator . Upon an initial notification by a user, the CMO should complete the "originator" portion of the IR form. If the form is faxed, those users must ensure that this part of the form has been completed. If all of the information has not been filled out, the CMO will be required to contact the user to obtain that information. To ensure uniformity in the data supplied on the forms, the following is what is intended for each data field:

a. USERS NAME - This should be the name of the person who experienced the problem not necessarily the person who is calling the problem in. If more information about the problem is required or if it is determined that the problem was caused by incorrect use of the system, that specific user may be contacted for possible retraining in the use of the system. The user will be contacted in all cases to be informed of the problem resolution.

b. OFFICE - The office code and/or agency of the individual reporting the problem.

c. PHONE - The phone number of the individual reporting the problem.

d. TIME - The specific time of the occurrence.

e. DATE - The specific date of the occurrence.

f. WORKSTATION - The specific name of the terminal where the problem occurred (if appropiate).

g. FUNCTION - This is the specific function that the user was attempting to perform when the problem occurred.

h. COMMAND ENTERED - This is the command that the user entered when the problem occurred.

i. PREVIOUS COMMAND - This is required. Many times the command entered before the problem actually occurs can lead to the problem. This can also help to determine if the user was following proper procedures for that function.

j. PROBLEM DESCRIPTION - This should contain the complete scenario of what the user did up to the occurrence of the problem. This information must be complete and accurate so that the problem can be analyzed, duplicated, and resolved in the shortest time possible.

k. SCREEN DISPLAY - Name of user screen being accessed when the problem

occurred. Attaching a copy of the screen display to the IR form would
be helpful.

SECTION 7. AIRFIELDS DEFICIENCY REPORT PROCEDURES
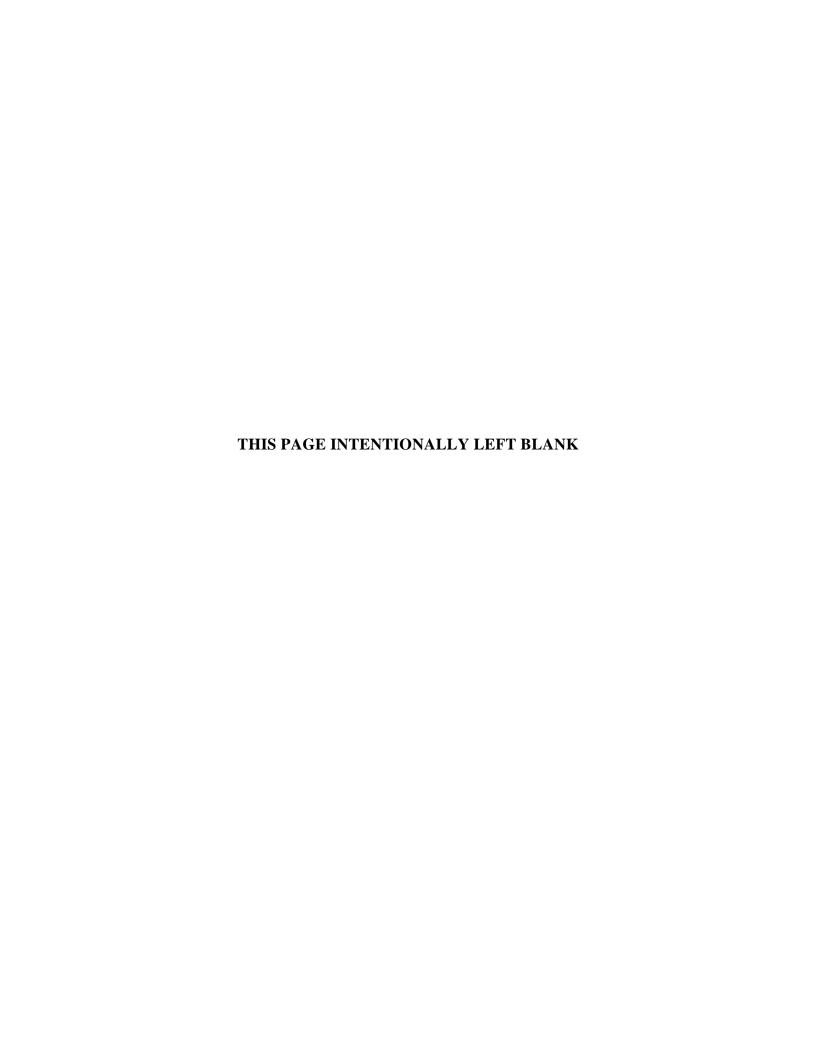
7.1 <u>AIRFIELDS Deficiency Report (DR)</u>

If analysis of a user incident report determines that, (1) there is an operational AIRFIELDS problem, (2) operational system does not fully comply with the system specifications, (3) an error in the documentation, a deficiency report (DR) will be generated by AIRFIELDS CMO. AIRFIELDS support personnel will not work on a DR until it is approved by the PMO from the CMO.

The following are the instructions for each field of the AIRFIELDS System Deficiency Report form:

1.   DR NUMBER - This is the next constitutive number for the DR as determined by the AIRFIELDS CMO.

2.   SYSTEM RELEASE - The designator of the AIRFIELDS release that the DR is written against.

3.   SUBMITTER NAME - The name of the individual writting the DR.

4.   PHONE - The phone number of the above individual.

5.   OFFICE - The office designation of the above individual.

6.   PRIORITY - The priority designation for the DR assigned by the CMO. The designators are LOW, MEDIUM, HIGH, URGENT.

7.   CSCI - The CSCI designator of the item with the DR.

8.   DESCRIPTION - The description of what the problem is. The specification that is not being met should be shown.

9.   DATE SUBMITTED TO MAINT. - The actual date that the CMO sent the DR to system support personnel.

10. ANALYST NAME - The name of the individual who will look at the problem and estimate the effort required to resolve it.

11. ANALYSIS HOURS - The number of hours taken to examine the problem.

12. EST. COMP. DATE - The date that the analyst estimates that the problem noted in the DR can be resolved, tested, and implemented.

13. EST. TOTAL HOURS - The amount of hours that the analyst estimates will be required to complete the DR.

14. PMO APPROVED - The signature of the Program Manager authorizing

work to actually begin on the DR.

15. DATE SIGNED - The date the PMO signed the approval to authorize the work on the DR.

16. ACTUAL COMPLETION DATES - As work is completed on each of the items listed the date that it was completed will be entered.

17. TOTAL HOURS - This is the total number of hours that was spent on all areas to complete the DR.

18. DATE TO CM - This is the date that maintenance reports to CM that all work on the DR has been completed. This will be done at a turn over meeting.

19. TEAM LEADER - This is the signature of the maintenance team leader verifing that all information on the form is complete and correct.

20. DATE SIGNED - This is the date that the team leader signed the DR form.

21. ACCOMPLISHMENTS - As events occur or item are completed and tested the analyst will document each item in this area with the number of hours spent on that item.

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SECTION 8. REFERENCES

The following is a list of documents that are applicable to the AIRFIELDS system and to the development of this Configuration Management Manual.

a. <u>Configuration Management, MIL-STD-973</u>, AMSC No. D6728. 17 April 1992.

b. <u>Software Development and Documentation, MIL-STD-498, Draft</u>.

c. <u>Defense System Software Development, DOD-STD-2167A</u>, 29 February 1988.

d. <u>DSSO Documentation Standards and Publications Style Manual</u>, PM 1-91, 1 June 1991.

e. <u>DSSO Standards and Procedures for Software Projects</u>, PM 2-92, 27 February 1992.

j. <u>Software Development Plan for the AIRFIELDS projects,</u>

k. Humphrey, Watts S., <u>Managing the Software Process</u>, Software Engineering Institute, Addison-Wesley, 1990.

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APPENDIX

FORMS

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